CLAIMS

1. A method for charging and maintaining the operation of a battery-powered electronic application device, including the steps of:

(A) providing a controllable switching device;

(B) providing a plurality of power sources each coupled to said application device via said controllable switching device, said plurality of power sources including at least two of the following;

(i) an AC power source;

(ii) a DC power source;

(iii) a direct oxidation fuel cell; and

(iv) a rechargeable battery; and

(C) switching said controllable switching device to select between said plurality of power sources to provide operating power to said application device or to charge said rechargeable battery.

2. The method as defined in claim 1, including the further steps of:

(A) selecting as a primary power source, said AC power source and determining whether said AC power source is available; and

(B) if said AC power source is available, responsively signaling said controllable switching device to select said AC power source to power said application device; and

(C) if said AC power source is not available, selecting one of said DC power source, or said fuel cell, or said rechargeable battery to power said application device.

3. The method as defined in claim 1, including the further steps of:

(A) selecting as a primary power source, said AC power source and determining whether said AC power source is available; and

(B) if said AC power source is available, selecting said AC power source to power said application device; and

(C) if said AC power source is not available, determining whether said DC power source is available and if so, selecting said DC power source to power said application device;

(D) if said DC power source is not available, determining whether said chargeable battery is sufficiently charged to power said application device and if so, selecting said rechargeable battery to power said application device;

(E) if said rechargeable battery is not sufficiently charged, responsively signaling said direct oxidation fuel cell to begin generating electricity to provide current to power said application device.

4. The method as defined in claim 1, including the further steps of:

(A) selecting as a primary power source, said DC power source and determining whether said DC power source is available;

(B) if said DC power source is available, selecting said DC power source to power said application device; and

(C) if said DC power source is not available, selecting one of said AC power source, said fuel cell, or said rechargeable battery to power said application device.

5. The method as defined in claim 1, including the further steps of:

(A) selecting as a primary power source, said fuel cell and determining whether said fuel cell is available;

(B) if said fuel cell is available, selecting said fuel cell source to power said application device; and

(C) if said fuel cell is not available, selecting one of said AC power source, said DC power source, or said rechargeable battery to power said application device.

6. The method as defined in claim 1, including the further steps of:

(A) selecting as a primary power source, said rechargeable battery and determining whether said fuel cell is available;

(B) if said rechargeable battery is available, selecting said rechargeable battery source to power said application device; and

(C) if said rechargeable battery is not available, selecting one of said AC power source, said DC power source, or said fuel cell to power said application device.

7. The method as defined in claim 1 including the further steps of:
determining whether said rechargeable battery is fully charged; and
if it is determined that said rechargeable battery is not fully charged, then signaling said AC power source, said DC power source and said fuel cell to charge said rechargeable battery.

8. A system for powering an electronic application device, comprising:
(A) an input adaptable to receive power from an AC power source;
(B) an input adaptable to receive power from a DC power source;
(C) a direct oxidation fuel cell system;
(D) a means by which said system may be electrically connected to said electronic application device; (i.e. a wire; hot pads, etc)
(E) a switching device connected to said AC input, said DC input and said fuel cell wherein said switching device is operable to select between a first state in which current flows through said switching device from said AC input, a second state in which current flows from said DC input and a third state in which current is drawn from said fuel cell system; and
(F) a microprocessor coupled to said switching device and programmed to select between said AC power source, said DC power source and said fuel cell system, depending upon predetermined conditions.

9. The system for powering an application device as defined in claim 8, further comprising a rechargeable battery connected to said input from said DC source, said input from AC power source and with said fuel cell system, and said microprocessor being programmed to select the rechargeable battery to power the application device if said DC source and said AC source are not available.

10. The system as defined in claim 9, wherein said microprocessor is further programmed to signal one of said DC power source, AC power source and fuel cell system to deliver power to charge said rechargeable battery while the application device is connected to one of the other non-selected sources so that the battery will be charged as the application device is being powered.

11. The system as defined in claim 8, further comprising a power combiner (?) and conditioner which is adapted to perform signal processing and signal conditioning to the power source selected by said microprocessor such that the power signal is compatible with the specifications of the application device.

12. The system as defined in claim 8, wherein said direct oxidation fuel cell system includes

(A) a fuel source;

(B) a housing;

(C) a direct oxidation fuel cell comprising a protonically conductive, electronically non-conductive membrane electrolyte having an anode aspect and a cathode aspect, and a catalyst coating being disposed on the anode and the cathode aspects such that when fuel is introduced to the anode aspect an anodic disassociation of the fuel into carbon dioxide protons and electrons occurs and a cathodic combination of protons, electrons and oxygen produces water whereby current is produced from the electricity generating reactions to provide current to a load associated with the fuel cell system.

13. A system for charging a rechargeable battery, comprising

(A) an input for receiving an AC power source;

(B) an input for receiving a DC power source;

(C) a direct oxidation fuel cell system;

(D) a rechargeable battery;

(E) a switching device operable to select between said AC power source, said DC power source and said fuel cell such that the selected power source provides power to charge said rechargeable battery; and

(F) a microprocessor programmed to direct said switching device to select between the AC power source, the DC power source and the fuel cell depending upon predetermined conditions.

14. The system as defined in claim 13 wherein the battery provides current to an electrical device as it is being recharged.

15. The system as defined in claim 14 wherein the battery can be removed and placed in an application device after it is charged.

16. A portable power source unit for charging and maintaining the operation of a battery powered application device, comprising:

(A) an input for receiving an external AC power source;

(B) an input for receiving an external DC power source;

(C) a direct oxidation fuel cell system;

(D) a rechargeable battery;

(E) a switching device operable to select between said AC power source, said DC power source, said fuel cell system and said rechargeable battery such that power is continuously applied to said battery-powered electronic application device; and

(F) a modular interface having a plurality of interfaces for receiving power connectors that couple the powering unit to an application device.

17. The powering unit as defined in claim 16, wherein said modular interface also includes inputs for producing signals of varying potentials that are available to power a number of different application devices.

18. The portable power unit as defined in claim 16 wherein said DC power source is an automobile DC power source.

19. The portable power unit as defined in claim 16 wherein said AC power source is one of the following:

(A) an electrical outlet in a building or structure;

(B) a portable generator; and

(C) a power grid.

20. The portable power unit as defined in claim 16 wherein said application device may be selected from the group consisting of:

(A) mobile phones,

(B) personal digital assistants,

(C) mobile computers,

(D) mobile DVD players, and

(E) mobile video game systems.